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Gowling Lafleur Henderson LLP  
160 Elgin Street  
Suite 2600  
Ottawa, ON K1P 1C3  
CANADA

EXAMINER
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BELLO, AGUSTIN

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PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ALAN F. GRAVES, IAN M. CUNNINGHAM, RYAN STARK,  
KENT E. FELSKÉ, CHRIS HOBBS, and JOHN H. WATKINS

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Appeal 2009-1247  
Application 09/893,493  
Technology Center 2600

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Decided:<sup>1</sup> April 27, 2009

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Before KENNETH W. HAIRSTON, JOHN A. JEFFERY, and  
CARLA M. KRIVAK, *Administrative Patent Judges*.

KRIVAK, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

Appellants appeal under 35 U.S.C. § 134 from a non-final rejection of claims 1-26. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

## STATEMENT OF CASE

Appellants' claimed invention is a communications network for a metropolitan area that includes access multiplexers and a photonic switch coupled to the access multiplexers. Sparse wavelength division multiplexed (SWDM) wavelengths are consolidated into dense wavelength division multiplexed (DWDM) wavelengths for transmission. A core node carries the DWDM wavelengths and routes the data packets within the communication network or out to a long haul network (Spec. 13:11-23). This reduces the number of transitions between protocol layers and technologies and allows more direct connections between endpoints in the same metropolitan or long distance network. Because the path from the access multiplexers through the network is photonic, the path is independent of the packet-level protocol, making the network more tolerant to future protocol or bit rate changes or developments in technology at the packet layer (Spec. 13:25-14:2).

Independent claim 1, reproduced below, is representative of the subject matter on appeal.

1. A communications network for a metropolitan area comprising:

a plurality of access multiplexers, each access multiplexer operable to provide multiplexing of data packets from a plurality of end-users onto a sparse dense wavelength division multiplexed (S-DWDM) wavelength; the S-DWDM wavelength having an optical precision capable of being

interleaved into the optical frequency constraints of a dense wavelength division multiplex (DWDM) wavelength plan used in a core network;

a photonic switch, coupled to the access multiplexers via fiber optic cable for carrying a plurality of S-DWDM wavelengths, being all-optical and operable to switch the plurality of S-DWDM wavelengths into a DWDM signal for transmission; and

a core node being part of the core network, coupled to the photonic switch via a fiber optic cable for carrying the DWDM signal, and operable to route the data packets within the communications network or out to a long haul network.

#### REFERENCES

Hung	US 6,583,901 B1	Jun. 24, 2003
Hugenberg	US 6,714,545 B1	Mar. 30, 2004

The Examiner rejected claims 1-26 under 35 U.S.C. § 103(a) based upon the teachings of Hugenberg and Hung.<sup>2</sup>

Appellants contend that Hugenberg does not teach or suggest multiplexing data packets from a plurality of end users onto a DWDM plan or a photonic switch operable to switch the wavelengths into a DWDM signal for transmission (App. Br. 7; Reply Br. 5) and that Hung does not teach interleaving of wavelengths (App. Br. 9; Reply Br. 9).<sup>3</sup>

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<sup>2</sup> Although the Examiner omitted claims 7 and 21 in the statement of the rejection (Ans. 3), the Examiner nonetheless included these claims in the body of the rejection. We therefore presume that the Examiner intended to reject these claims.

<sup>3</sup> The Amended Appeal Brief filed Nov. 6, 2007, is referred to throughout the opinion.

## ISSUE

Did Appellants establish the Examiner failed to provide a prima facie case of obviousness by finding that Appellants' photonic switch is the same as the aggregation device of Hugenberg?

## FINDINGS OF FACT

1. Appellants' invention is directed to a communications network including a plurality of access multiplexers for multiplexing data packets onto S-DWDM wavelength having optical precision capable of being interleaved into the constraints of a DWDM wavelength plan used in a core network (Spec. 20:23-21:12).

2. An all-optical photonic switch switches the S-DWDM wavelengths into a DWDM signal for transmission (Spec. 21:12-20). A core node carries the DWDM signal and routes the data packets within the communications network or out to a long haul network (cl. 1).

3. Hugenberg teaches VDSL data network. Hugenberg supports multiple service platforms and supports two-way data services over high-speed fiber optics using SONET, DWDM, IP, ATM, and other transport systems (col. 7, ll. 33-41).

4. Hugenberg utilizes an ATM/IP universal service access multiplexer (USAM) (col. 3, ll. 50-51; Fig. 2) and a Router/ATM Aggregation Device 40 (col. 6, ll. 17-18; Fig. 2).

## PRINCIPLES OF LAW

If the Examiner's proposed modification renders the prior art unsatisfactory for its intended purpose, the Examiner has failed to make a

prima facie case of obviousness. *See In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984).

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). If the Examiner’s burden is met, the burden then shifts to Appellants to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *Id.*

## ANALYSIS

The Examiner rejected claims 1-26 under 35 U.S.C. § 103 as obvious over Hugenberg and Hung.<sup>4</sup> Therefore, this rejection is first addressed with respect to independent claim 1.

The Examiner finds that Hugenberg teaches all the elements of Appellants’ claimed invention but differs in that Hugenberg fails to specifically teach an S-DWDM wavelength having an optical precision capable of being interleaved into the DWDM wavelength plan, but that Hung teaches providing a wavelength having an optical precision capable of being interleaved into the DWDM wavelength plan (Ans. 4). Thus, one

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<sup>4</sup> As we indicated previously, although the Examiner noted that claims 1-6, 8-20, and 22-26 are rejected under 35 U.S.C. § 103 (Ans. 3), this appears to be a mistake as claims 7 and 21 are included in the rejection (Ans. 5, 6).

skilled in the art would have been motivated to employ a wavelength having optical precision capable of being interleaved into a DWDM wavelength plan as taught by Hugenberg to avoid exhausting the bandwidth of the fiber as taught by Hung (Ans. 4).

Appellants contend that Hugenberg does not teach the access multiplexer or the photonic switch, and that Hung teaches the S-DWDM recited in the claims (App. Br. 6-10).

With respect to the photonic switch, the Examiner asserts that the aggregation device 40 in Fig. 2 of Hugenberg (Ans. 3) is the same as Appellants' photonic switch. The Examiner also finds the aggregation switch receives optical signs that are routed, aggregated, and then output as optical signals to fibers 24 without mention of optical-electrical-optical conversion (Ans. 9).

Appellants contend the aggregation switch is not a photonic switch. A photonic switch is defined in the Specification (Spec. 22:31) as an all-optical switch. As shown in Appellants' Fig. 8, the entire traverse from access to core is in the optical domain as are all the transactions (App. Br. 7; Spec. 55:24-30). Appellants contend Hugenberg's aggregation device is an electrical device where each bit rate service is mapped to a range of virtual path identifiers/virtual channel identifiers (App. Br. 8; Reply Br. 7). We agree. Further, Hugenberg's aggregation device is a central office that receives signals from a broadband digital terminal (BDT) (Fig. 2). As part of the central office, there is no reason why the aggregation device would not aggregate both electrical and optical signals; thus, Hugenberg's aggregation device is a router that is an optical-electrical-optical device. There is no indication in Hugenberg that the aggregation device is or could

be an all-optical device. The Examiner's finding that "the mapping functionality the Appellant insists classifies Hugenberg's device as an electrical device can occur in either the optical domain or the electrical domain" (Ans. 9) supports Appellants' position that, although the input fibers and the output fibers in Hugenberg are optical, there is nothing suggesting the aggregation device is *entirely* optical. If Hugenberg's system included an all-optical photonic switch, as stated by the Examiner, it would have stated such. Therefore, modifying Hugenberg in the manner suggested by the Examiner would render Hugenberg unsatisfactory for its intended purpose. *See Gordon*, 733 F.2d at 902.

Therefore, the Examiner has not established a prima facie case of obviousness with respect to claim 1 or independent claims 16, 22, and 23, which recite commensurate limitations. Therefore, the Examiner's rejection of these claims is not sustained, nor is the Examiner's rejection of dependent claims 2-15, 17-21, and 24-26 sustained for similar reasons.

### CONCLUSION

Appellants have established that the Examiner erred in rejecting claims 1-26 under 35 U.S.C. § 103.

### DECISION

The Examiner's decision rejecting claims 1-26 is reversed.

### REVERSED



Appeal 2009-1247  
Application 09/893,493

babc

Gowling Lafleur Henderson LLP  
160 Elgin Street  
Suite 2600  
Ottawa ON K1P 1C3 CA CANADA